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## THE SO-CALLED WOODSIA ALPINA IN NORTH AMERICA


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It has, for some time, been clear to the writer that the plant which in temperate eastern North America has long passed as *Woodsia alpina* is really abundantly distinct from the circumpolar, arctic-alpine plant which alone should bear that name.

The latter is a somewhat variable species which, by some European authors[1], has been considered a variety or subspecies of the circumpolar *W. ilvensis* (L.) R. Br. Thus Robert Brown (Linn. Soc. Trans. XI, 172 (1815)), in discussing the relation of *W. ilvensis* to *W. hyperborea* [a *nomen confusum* for *W. alpina*] states:

> "These two plants are indeed so nearly related, that I find myself unable to construct for them clear specific characters; and therefore, in proposing them here as distinct species, I am, for want of sufficient materials to determine the question, rather following the prevailing opinion than my own."

Brown's description, which follows, clearly shows his difficulty:

> "*ilvensis*. 1. W. frondibus bipinnatifidis, pinnis oblongis, pinnulis confluentibus multifloris: inferioribus subrepandis: infimis subaequalibus. . . .
> *Habitat* in rupibus Europae et Americae borealis . . .
> *hyperborea*. 2. W. frondibus pinnatis, pinnis triangularibus oblongisve inciso-pinnatifidis: lobis integerrimis paucifloris: antico baseos productiore. Tab. XI. . . .
> *Habitat* in Europae alpibus . . ."

The nomenclature of the latter species is as follows:

Woodsia alpina (Bolton) S. F. Gray, Nat. Arr. Brit. Pl. **2:**

[1] Hartman, Skandinaviens Flora p. 536 (1879); Gelert in Ostenfeld, Flora Arctica p. 7 (1902); Simmons, Fl. Ellesmereland 183 (1906); Hegi, Fl. v. Mittel-Europa **1:** 13 (1906).

17 (1821); *Acrostichum alpinum* Bolton, Fil. Brit. 76 (1790); *W. hyperborea* R. Br. as to plant, not as to basonym, *Acrostichum hyperboreum* Liljebl. Sv. Fl. 307 (1792); Fl. Dan. Tab. 2921 fig. 2.

Holmberg (Skandinaviens Flora **1:** 4 (1922)) gives the following description (here translated from the Swedish text):

> "**W. alpina** (Bolton) S. F. Gray . . . *Stipe usually 1/3 to 1/2 as long as the lamina; lamina hairy on the underside but without chaff; length of the primary segments not, or but slightly, greater than their breadth.*— Usually lower (3.0 to 15.0 cm.) and fresher green than preceding [*W. ilvensis*]. Lamina narrowly linear-lanceolate, 1.0–2.0 cm. broad, broadest at or above the middle, sparingly hirsute, sometimes without chaff. Primary segments short, broadly ovate, often deeply lobed, with 1–3 (–4) entire secondary segments on each side . . .
> On rocks (preferably calcareous) chiefly in the mountains and in alpine places."

To Holmberg's description should be added that the stipe is straw-colored to pale brown, *dull, not at all shiny*, always more or less chaffy. The fronds are rather stiffly erect, usually forming small, dense and firm tufts; the sori as a rule are confluent. In 21 typical specimens selected at random in the Gray Herbarium and in the National Herbarium of Canada, the fronds average 8.1 cm. in length and 1.45 cm. in breadth, near or slightly above the middle, while the average diameter of the stipe just above the joint is 1.0 mm. Habitat: dry, sunny places such as rock talus etc. Distribution: Circumpolar, arctic-alpine. Northern East and West Greenland across arctic Canada to Yukon and Alaska, arctic and alpine Asia and Europe, Iceland. The following specimens in the Gray Herbarium (G) and the National Herbarium of Canada (Can) are representative:

Sweden: Uppl. Djurö S$^{n}$, Ranmarö, July 10, 1922, *A. Hülphers* (Can). Iceland: Thingvellir, *Edith Scamman*, No. 1202 (G). W. Greenland: Umiviarfik Fj., 71° 56′ N., *M. P. Porsild*, Sept. 7, 1934 (G); Kangerdluarsuk, 74° 18′ *N. Ryder* (Can). Hudson Strait: Nottingham Island, *R. Bell* (Can 28,354); Coats Isl., *A. E. Porsild*, 5862 (Can). Keewatin District: Baker Lake, *A. E. Porsild*, 6075 (Can). Mackenzie District: East slope of Richardson Mts. west of the Mackenzie Delta, *A. E. Porsild*, 6744 (Can). Yukon Territory: Canol Road, Rose-Lapie Pass, *A. E. Porsild & A. J. Breitung*, 10,103 (Can). Alaska: Healy, *J. P. Anderson* 5772 (Can); Norton Sound, Pastolik, *A. E. & R. T. Porsild*, 889 (Can).

The plant of temperate eastern North America differs consistently from the arctic-alpine, circumpolar plant by its non-

confluent sori, *reddish-brown, shiny stipes and rhachis which are almost completely devoid of chaffy scales.* Also it is taller and more delicate and the fronds are somewhat flexuous. Unlike the arctic-alpine plant it prefers moist, shady places and is invariably found on calcareous soil. In 29 typical specimens selected at random in the Gray Herbarium and in the National Herbarium of Canada the fronds average 12.4 cm. in length and 1.58 cm. in breadth well above the middle while the average diameter of the stipe just above the joint is 0.75 mm.

In 1940, Mr. C. A. Weatherby (Am. Fern. Journ. **31**, no. 2: 62 (1941)), in the herbarium of Mount Allison University of Sackville, New Brunswick, discovered a number of Lawson's fern types, among them the type of *Woodsia glabella* β *Belli* Lawson. Of it Mr. Weatherby, l. c., writes as follows:

> "Lawson was evidently in much doubt as to this specimen. A slip accompanying it reads: "Woodsia laetevirens var. of glabella ??, ilvensis ? or hyperborea ??," and finally, in pencil, "hyperborea according to Eaton". Lawson eventually accepted Eaton's determination and reduced his variety (Trans. Bot. Soc. Edinburgh **8:** 108 (1866)). The specimen is a rather stout individual of *W. alpina.*"

A photograph kindly presented by Mr. Weatherby shows that Lawson's plant is indeed our plant, the name of which becomes:

WOODSIA **Belli** (Lawson), n. comb. *W. glabella* β *Belli* Lawson, Edinburgh New Phil. Journ. n. s. **19:** 281 (1864); *W. alpina* of Gray's Manual, not *W. alpina* (Bolton) S. F. Gray (at least in part). TYPE: Dartmouth River, 20 miles from mouth, Gaspé, C. E. [Canada East], July 3, 1862, *John Bell.* Habitat: Shaded, moist places on calcareous rocks. Distribution: Lab., Nfld., Que., south to northern New Brunswick and northern Vermont; the Adirondacks, N. Y. and west to Lake Superior. The following specimens in the Gray Herbarium (G) and the National Herbarium of Canada (Can) are typical: LABRADOR: Nain, 56° 30′ N., *V. C. Wynne-Edwards,* No. 7531 (Can). NEW BRUNSWICK: Aroostook Falls, *John Macoun,* No. 22,700 (Can). QUEBEC: BONAVENTURE CO., Grand Cascapedia R., *J. F. Collins & M. L. Fernald,* No. 7 (G and Can); RIMOUSKI CO., crevices of limestone-conglomerate, north side of the "Haystack" west of Bic, *M. L. Fernald & J. F. Collins,* No. 831 (G and Can); GASPÉ CO., River Ste. Anne des Monts, *M. L. Fernald & J. F. Collins,* No. 292 (G and Can). ONTARIO: Kakabeka Falls, Kaministiquia R., Red Rock near C. P. R. station, *John Macoun,* No. 28,351 (as *W. glabella*) (Can); Thunder Bay, Lake Superior, July 31–Aug. 6, 1926, *F. Morris,* No. 117,370 (Can). MICHIGAN:

Keweenaw Co., Eagle Harbor, *M. L. Fernald & A. S. Pease*, No. 3051 (G). Minnesota: Cook Co., south side of Clearwater Lake, *F. K. Butters & M. N. Buell*, No. 397 (G).

The characters distinguishing *W. alpina* from *W. Belli* may be summarized as follows:

| | *W. alpina* | *W. Belli* |
|---|---|---|
| Stipe: | straw-coloured to pale brown, *dull*, ± chaffy | reddish-brown, *shiny*, almost devoid of chaff |
| Average diam. just above joint: | 1.0 mm. | 0.75 mm. |
| Frond: | broadest above the middle, stiffly erect, | broadest at the middle, delicate, flexuous |
| Average dimensions of frond: | 8.1 cm. long; 1.45 cm. wide | 12.4 cm. long, 1.58 cm. wide. |
| Sori: | usually confluent | rarely confluent. |

National Museum of Canada

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Distichlis spicata in Australia.—When publishing in 1943 (Bull. Torr. Bot. Club **70:** 633–650) on "The North American Variations of *Distichlis spicata*", the writer confined the range for the composite species to North and South America. It was also stated that *Distichlis* "is represented by *D. distichophylla* (Labill.) Fassett in the South Australian area." This last conclusion was drawn entirely from the literature on the genus, since at that time no Australian material had been examined. Subsequent study of sheets of *D. distichophylla* in the Herbarium of the New York Botanical Garden show it to fall well within the specific limits of *D. spicata*. Although the relationship within *D. spicata* must remain obscure until the South American varieties are clarified, in order to redefine the range of the species and also to bring the Australian material into its proper alignment in the genus, the following combination is important:

Distichlis spicata (L.) Greene var. **distichophylla** (R. & S.) comb. nov. *Uniola distichophylla* R. & S. Syst. Veg. **2:** 596. 1817. *Distichlis distichophylla* Fassett, Rhodora **27:** 71. 1925.

Apparently *Distichlis* is native in Australia for a specific distribution involving North and South America and Australia is not unusual. The geographical varieties that compose both *Scirpus americanus* Pers. and *S. cernuus* Vahl encompass the same area.—A. A. Beetle, Division of Agronomy, University of California, Davis.